National Cholesterol Education Program

Adult Treatment Panel III (ATP III) Guidelines

2

Third Report of the

Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) (ATP III)

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3

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Society for Public Health Education
U.S. Department of Agriculture
U.S. Department of Defense
U.S. Department of Veterans Affairs (VA)
U.S. Food and Drug Administration

4

National Cholesterol Education Program Reports

- Adult Treatment Panel I (1988)
  Adult Treatment Panel II (1993)
  Adult Treatment Panel III (2001)
- Recommendations for Improving Cholesterol Measurement (1990)
  Recommendations on Lipoprotein Measurement (1995)
- Population Strategies for Blood Cholesterol Reduction (1990)
- Blood Cholesterol Levels in Children and Adolescents (1991)

5

New Features of ATP III

Focus on Multiple Risk Factors

- Diabetes: CHD risk equivalent
- Framingham projections of 10-year CHD risk
  - Identify certain patients with multiple risk factors for more intensive treatment
- Multiple metabolic risk factors (metabolic syndrome)
  - Intensified therapeutic lifestyle changes

6

New Features of ATP III (continued)

Modification of Lipid and Lipoprotein Classification

- LDL cholesterol <100 mg/dL—optimal
- HDL cholesterol <40 mg/dL
  - Categorical risk factor
  - Raised from <35 mg/dL
- Lower triglyceride classification cut points
  - More attention to moderate elevations

7

New Features of ATP III (continued)

New Recommendation for Screening/Detection

- Complete lipoprotein profile preferred
  - Fasting total cholesterol, LDL, HDL, triglycerides
- Secondary option
  - Non-fasting total cholesterol and HDL
  - Proceed to lipoprotein profile if TC ≥200 mg/dL or HDL <40 mg/dL

8

New Features of ATP III (continued)

More Intensive Lifestyle Intervention (Therapeutic Lifestyle Changes = TLC)

- Therapeutic diet lowers saturated fat and cholesterol intakes to levels of previous Step II
- Adds dietary options to enhance LDL lowering
  - Plant stanols/sterols (2 g/d)
  - Viscous (soluble) fiber (10–25 g/d)
- Increased emphasis on weight management and physical activity

9

New Features of ATP III (continued)

New strategies for Promoting Adherence

In both:

- Therapeutic Lifestyle Changes (TLC)
- Drug therapies

10

New Features of ATP III (continued)

- For patients with triglycerides ≥200 mg/dL
  - LDL cholesterol: primary target of therapy
  - Non-HDL cholesterol: secondary target of therapy

Non HDL-C = total cholesterol – HDL cholesterol

11

Cost-Effectiveness Issues

- Therapeutic lifestyle changes (TLC)
  - Most cost-effective therapy
- Drug therapy
  - Dominant factor affecting costs
  - Cost effectiveness: one factor in the decision for drug therapy
  - Declining price of drugs: increases cost effectiveness

ATP III Guidelines

Detection and Evaluation

13

Categories of Risk Factors

- Major, independent risk factors
- Life-habit risk factors
- Emerging risk factors

14

Life-Habit Risk Factors

- Obesity (BMI ≥ 30)
- Physical inactivity
- Atherogenic diet

15

Emerging Risk Factors

- Lipoprotein (a)
- Homocysteine
- Prothrombotic factors
- Proinflammatory factors
- Impaired fasting glucose
- Subclinical atherosclerosis

16

Risk Assessment

Count major risk factors

- For patients with multiple (2+) risk factors
  - Perform 10-year risk assessment
- For patients with 0–1 risk factor
  - 10 year risk assessment not required
  - Most patients have 10-year risk <10%

17

Major Risk Factors (Exclusive of LDL Cholesterol) That Modify LDL Goals

- Cigarette smoking
- Hypertension (BP ≥140/90 mmHg or on antihypertensive medication)
- Low HDL cholesterol (<40 mg/dL)†
- Family history of premature CHD
  - CHD in male first degree relative <55 years
  - CHD in female first degree relative <65 years
- Age (men ≥45 years; women ≥55 years)

† HDL cholesterol ≥60 mg/dL counts as a "negative" risk factor; its presence removes one risk factor from the total count.

18

Diabetes

In ATP III, diabetes is regarded as a CHD risk equivalent.

19

CHD Risk Equivalents

- Risk for major coronary events equal to that in established CHD
- 10-year risk for hard CHD >20%

Hard CHD = myocardial infarction + coronary death

20

Diabetes as a CHD Risk Equivalent

- 10-year risk for CHD ≅ 20%
- High mortality with established CHD
  - High mortality with acute MI
  - High mortality post acute MI

21

CHD Risk Equivalents

- Other clinical forms of atherosclerotic disease (peripheral arterial disease, abdominal aortic aneurysm, and symptomatic carotid artery disease)
- Diabetes
- Multiple risk factors that confer a 10-year risk for CHD >20%

22

Three Categories of Risk that Modify LDL-Cholesterol Goals

Risk Category	LDL Goal (mg/dL)
CHD and CHD risk equivalents	<100
Multiple (2+) risk factors	<130
Zero to one risk factor	<160

23

ATP III Lipid and Lipoprotein Classification

LDL Cholesterol (mg/dL)	
<100	Optimal
100–129	Near optimal/above optimal
130–159	Borderline high
160–189	High
≥190	Very high

24

ATP III Lipid and Lipoprotein Classification (continued)

HDL Cholesterol (mg/dL)	
<40	Low
≥60	High

25

ATP III Lipid and Lipoprotein Classification (continued)

Total Cholesterol (mg/dL)

<200	Desirable
200–239	Borderline high
≥240	High

ATP III Guidelines

Goals and Treatment Overview

27

Primary Prevention With LDL-Lowering Therapy

Public Health Approach

- Reduced intakes of saturated fat and cholesterol
- Increased physical activity
- Weight control

28

Primary Prevention

Goals of Therapy

- Long-term prevention (>10 years)
- Short-term prevention (≤10 years)

29

Causes of Secondary Dyslipidemia

- Diabetes
- Hypothyroidism
- Obstructive liver disease
- Chronic renal failure
- Drugs that raise LDL cholesterol and lower HDL cholesterol (progestins, anabolic steroids, and corticosteroids)

30

Secondary Prevention With LDL-Lowering Therapy

- Benefits: reduction in total mortality, coronary mortality, major coronary events, coronary procedures, and stroke
- LDL cholesterol goal: <100 mg/dL
- Includes CHD risk equivalents
- Consider initiation of therapy during hospitalization (if LDL ≥100 mg/dL)

31

LDL Cholesterol Goals and Cutpoints for Therapeutic Lifestyle Changes (TLC) and Drug Therapy in Different Risk Categories

Risk Category	LDL Goal (mg/dL)	LDL Level at Which to Initiate Therapeutic Lifestyle Changes (TLC) (mg/dL)	LDL Level at Which to Consider Drug Therapy (mg/dL)
CHD or CHD Risk Equivalents (10-year risk >20%)	<100	≥100	≥130 (100–129: drug optional)
2+ Risk Factors (10-year risk ≤20%)	<130	≥130	10-year risk 10–20%: ≥130
			10-year risk <10%: ≥160
0–1 Risk Factor	<160	≥160	≥190 (160–189: LDL-lowering drug optional)

32

LDL Cholesterol Goal and Cutpoints for Therapeutic Lifestyle Changes (TLC) and Drug Therapy in Patients with CHD and CHD Risk Equivalents (10-Year Risk >20%)

LDL Goal	LDL Level at Which to Initiate Therapeutic Lifestyle Changes (TLC)	LDL Level at Which to Consider Drug Therapy
<100 mg/dL	≥100 mg/dL	≥130 mg/dL (100–129 mg/dL: drug optional)

33

LDL Cholesterol Goal and Cutpoints for Therapeutic Lifestyle Changes (TLC) and Drug Therapy in Patients with Multiple Risk Factors (10-Year Risk ≤20%)

LDL Goal	LDL Level at Which to Initiate Therapeutic Lifestyle Changes (TLC)	LDL Level at Which to Consider Drug Therapy
<130 mg/dL	≥130 mg/dL	10-year risk 10–20%: ≥130 mg/dL
		10-year risk <10%: ≥160 mg/dL

34

LDL Cholesterol Goal and Cutpoints for Therapeutic Lifestyle Changes (TLC) and Drug Therapy in Patients with 0–1 Risk Factor

LDL Goal	LDL Level at Which to Initiate Therapeutic Lifestyle Changes (TLC)	LDL Level at Which to Consider Drug Therapy
<160 mg/dL	≥160 mg/dL	≥190 mg/dL (160–189 mg/dL: LDL-lowering drug optional)

35

LDL-Lowering Therapy in Patients With CHD and CHD Risk Equivalents

Baseline LDL Cholesterol: ≥130 mg/dL

- Intensive lifestyle therapies
- Maximal control of other risk factors
- Consider starting LDL-lowering drugs simultaneously with lifestyle therapies

36

LDL-Lowering Therapy in Patients With CHD and CHD Risk Equivalents

Baseline (or On-Treatment) LDL-C: 100–129 mg/dL

Therapeutic Options:

- LDL-lowering therapy
  - Initiate or intensify lifestyle therapies
  - Initiate or intensify LDL-lowering drugs
- Treatment of metabolic syndrome
  - Emphasize weight reduction and increased physical activity
- Drug therapy for other lipid risk factors
  - For high triglycerides/low HDL cholesterol
  - Fibrates or nicotinic acid

37

LDL-Lowering Therapy in Patients With CHD and CHD Risk Equivalents

Baseline LDL-C: <100 mg/dL

- Further LDL lowering not required
- Therapeutic Lifestyle Changes (TLC) recommended
- Consider treatment of other lipid risk factors
  - Elevated triglycerides
  - Low HDL cholesterol
- Ongoing clinical trials are assessing benefit of further LDL lowering

38

LDL-Lowering Therapy in Patients With Multiple (2+) Risk Factors and 10-Year Risk ≤20%

10-Year Risk 10–20%

- LDL-cholesterol goal <130 mg/dL
- Aim: reduce both short-term and long-term risk
- Immediate initiation of Therapeutic Lifestyle Changes (TLC) if LDL-C is ≥130 mg/dL
- Consider drug therapy if LDL-C is ≥130 mg/dL after 3 months of lifestyle therapies

39

LDL-Lowering Therapy in Patients With Multiple (2+) Risk Factors and 10-Year Risk ≤20%

10-Year Risk <10%

- LDL-cholesterol goal: <130 mg/dL
- Therapeutic aim: reduce long-term risk
- Initiate therapeutic lifestyle changes if LDL-C is ≥130 mg/dL
- Consider drug therapy if LDL-C is ≥160 mg/dL after 3 months of lifestyle therapies

40

LDL-Lowering Therapy in Patients With 0–1 Risk Factor

- Most persons have 10-year risk <10%
- Therapeutic goal: reduce long-term risk
- LDL-cholesterol goal: <160 mg/dL
- Initiate therapeutic lifestyle changes if LDL-C is ≥160 mg/dL
- If LDL-C is ≥190 mg/dL after 3 months of lifestyle therapies, consider drug therapy
- If LDL-C is 160–189 mg/dL after 3 months of lifestyle therapies, drug therapy is optional

41

LDL-Lowering Therapy in Patients With 0–1 Risk Factor and LDL-Cholesterol 160-189 mg/dL (after lifestyle therapies)

Factors Favoring Drug Therapy

- Severe single risk factor
- Multiple life-habit risk factors and emerging risk factors (if measured)

42

Benefit Beyond LDL Lowering: The Metabolic Syndrome as a Secondary Target of Therapy

General Features of the Metabolic Syndrome

- Abdominal obesity
- Atherogenic dyslipidemia
  - Elevated triglycerides
  - Small LDL particles
  - Low HDL cholesterol
- Raised blood pressure
- Insulin resistance (± glucose intolerance)
- Prothrombotic state
- Proinflammatory state

ATP III Guidelines

Therapeutic Lifestyle Changes (TLC)

44

Therapeutic Lifestyle Changes in LDL-Lowering Therapy

Major Features

- TLC Diet
  - Reduced intake of cholesterol-raising nutrients (same as previous Step II Diet)
    - Saturated fats <7% of total calories
    - Dietary cholesterol <200 mg per day
  - LDL-lowering therapeutic options
    - Plant stanols/sterols (2 g per day)
    - Viscous (soluble) fiber (10–25 g per day)
- Weight reduction
- Increased physical activity

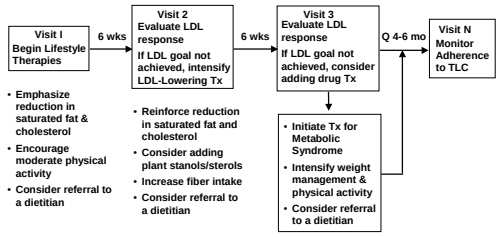
45

Therapeutic Lifestyle Changes Nutrient Composition of TLC Diet

Nutrient	Recommended Intake
• Saturated fat	Less than 7% of total calories
• Polyunsaturated fat	Up to 10% of total calories
• Monounsaturated fat	Up to 20% of total calories
• Total fat	25–35% of total calories
• Carbohydrate	50–60% of total calories
• Fiber	20–30 grams per day
• Protein	Approximately 15% of total calories
• Cholesterol	Less than 200 mg/day
• Total calories (energy)	Balance energy intake and expenditure to maintain desirable body weight/ prevent weight gain

46

A Model of Steps in Therapeutic Lifestyle Changes (TLC)



47

Steps in Therapeutic Lifestyle Changes (TLC)

First Visit

- Begin Therapeutic Lifestyle Changes
- Emphasize reduction in saturated fats and cholesterol
- Initiate moderate physical activity
- Consider referral to a dietitian (medical nutrition therapy)
- Return visit in about 6 weeks

48

Steps in Therapeutic Lifestyle Changes (TLC) (continued)

Second Visit

- Evaluate LDL response
- Intensify LDL-lowering therapy (if goal not achieved)
  - Reinforce reduction in saturated fat and cholesterol
  - Consider plant stanols/sterols
  - Increase viscous (soluble) fiber
  - Consider referral for medical nutrition therapy
- Return visit in about 6 weeks

49

Steps in Therapeutic Lifestyle Changes (TLC) (continued)

Third Visit

- Evaluate LDL response
- Continue lifestyle therapy (if LDL goal is achieved)
- Consider LDL-lowering drug (if LDL goal not achieved)
- Initiate management of metabolic syndrome (if necessary)
  - Intensify weight management and physical activity
- Consider referral to a dietitian

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Drug Therapy

51

Drug Therapy

HMG CoA Reductase Inhibitors (Statins)

- Reduce LDL-C 18–55% & TG 7–30%
- Raise HDL-C 5–15%
- Major side effects
  - Myopathy
  - Increased liver enzymes
- Contraindications
  - Absolute: liver disease
  - Relative: use with certain drugs

52

HMG CoA Reductase Inhibitors (Statins)

Statin	Dose Range
Lovastatin	20–80 mg
Pravastatin	20–40 mg
Simvastatin	20–80 mg
Fluvastatin	20–80 mg
Atorvastatin	10–80 mg
Cerivastatin	0.4–0.8 mg

53

HMG CoA Reductase Inhibitors (Statins) (continued)

Demonstrated Therapeutic Benefits

- Reduce major coronary events
- Reduce CHD mortality
- Reduce coronary procedures (PTCA/CABG)
- Reduce stroke
- Reduce total mortality

54

Drug Therapy

Bile Acid Sequestrants

- Major actions
  - Reduce LDL-C 15–30%
  - Raise HDL-C 3–5%
  - May increase TG
- Side effects
  - GI distress/constipation
  - Decreased absorption of other drugs
- Contraindications
  - Dysbetalipoproteinemia
  - Raised TG (especially >400 mg/dL)

55

Bile Acid Sequestrants

Drug	Dose Range
Cholestyramine	4–16 g
Colestipol	5–20 g
Colesevelam	2.6–3.8 g

56

Bile Acid Sequestrants (continued)

Demonstrated Therapeutic Benefits

- Reduce major coronary events
- Reduce CHD mortality

57

Drug Therapy

Nicotinic Acid

- Major actions
  - Lowers LDL-C 5–25%
  - Lowers TG 20–50%
  - Raises HDL-C 15–35%
- Side effects: flushing, hyperglycemia, hyperuricemia, upper GI distress, hepatotoxicity
- Contraindications: liver disease, severe gout, peptic ulcer

58

Nicotinic Acid

Drug Form	Dose Range
Immediate release (crystalline)	1.5–3 g
Extended release	1–2 g
Sustained release	1–2 g

59

Nicotinic Acid (continued)

Demonstrated Therapeutic Benefits

- Reduces major coronary events
- Possible reduction in total mortality

60

Drug Therapy

Fibric Acids

- Major actions
  - Lower LDL-C 5–20% (with normal TG)
  - May raise LDL-C (with high TG)
  - Lower TG 20–50%
  - Raise HDL-C 10–20%
- Side effects: dyspepsia, gallstones, myopathy
- Contraindications: Severe renal or hepatic disease

61

Fibric Acids

Drug	Dose
• Gemfibrozil	600 mg BID
• Fenofibrate	200 mg QD
• Clofibrate	1000 mg BID

62

Fibric Acids (continued)

Demonstrated Therapeutic Benefits

- Reduce progression of coronary lesions
- Reduce major coronary events

63

Secondary Prevention: Drug Therapy for CHD and CHD Risk Equivalents

- LDL-cholesterol goal: <100 mg/dL
- Most patients require drug therapy
- First, achieve LDL-cholesterol goal
- Second, modify other lipid and non-lipid risk factors

64

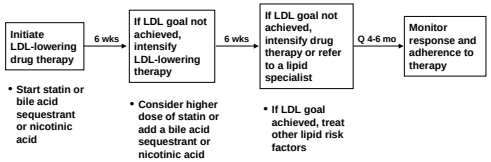
Secondary Prevention: Drug Therapy for CHD and CHD Risk Equivalents (continued)

Patients Hospitalized for Coronary Events or Procedures

- Measure LDL-C within 24 hours
- Discharge on LDL-lowering drug if LDL-C ≥130 mg/dL
- Consider LDL-lowering drug if LDL-C is 100–129 mg/dL
- Start lifestyle therapies simultaneously with drug

65

Progression of Drug Therapy in Primary Prevention



66

Drug Therapy for Primary Prevention

First Step

- Initiate LDL-lowering drug therapy (after 3 months of lifestyle therapies)
- Usual drug options
  - Statins
  - Bile acid sequestrant or nicotinic acid
- Continue therapeutic lifestyle changes
- Return visit in about 6 weeks

67

Drug Therapy for Primary Prevention

Second Step

- Intensify LDL-lowering therapy (if LDL goal not achieved)
- Therapeutic options
  - Higher dose of statin
  - Statin + bile acid sequestrant
  - Statin + nicotinic acid
- Return visit in about 6 weeks

68

Drug Therapy for Primary Prevention (continued)

Third Step

- If LDL goal not achieved, intensify drug therapy or refer to a lipid specialist
- Treat other lipid risk factors (if present)
  - High triglycerides (≥200 mg/dL)
  - Low HDL cholesterol (<40 mg/dL)
- Monitor response and adherence to therapy (Q 4–6 months)

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Benefit Beyond LDL-Lowering: The Metabolic Syndrome as a Secondary Target of Therapy

70

Metabolic Syndrome

Synonyms

- Insulin resistance syndrome
- (Metabolic) Syndrome X
- Dysmetabolic syndrome
- Multiple metabolic syndrome

71

Metabolic Syndrome (continued)

Causes

- Acquired causes
  - Overweight and obesity
  - Physical inactivity
  - High carbohydrate diets (>60% of energy intake) in some persons
- Genetic causes

72

Metabolic Syndrome (continued)

Therapeutic Objectives

- To reduce underlying causes
  - Overweight and obesity
  - Physical inactivity
- To treat associated lipid and non-lipid risk factors
  - Hypertension
  - Prothrombotic state
  - Atherogenic dyslipidemia (lipid triad)

73

Metabolic Syndrome (continued)

Management of Overweight and Obesity

- Overweight and obesity: lifestyle risk factors
- Direct targets of intervention
- Weight reduction
  - Enhances LDL lowering
  - Reduces metabolic syndrome risk factors
- Clinical guidelines: Obesity Education Initiative
  - Techniques of weight reduction

74

Metabolic Syndrome (continued)

Management of Physical Inactivity

- Physical inactivity: lifestyle risk factor
- Direct target of intervention
- Increased physical activity
  - Reduces metabolic syndrome risk factors
  - Improves cardiovascular function
- Clinical guidelines: U.S. Surgeon General's Report on Physical Activity

ATP III Guidelines

Specific Dyslipidemias

76

Specific Dyslipidemias: Very High LDL Cholesterol (≥190 mg/dL)

Causes and Diagnosis

- Genetic disorders
  - Monogenic familial hypercholesterolemia
  - Familial defective apolipoprotein B-100
  - Polygenic hypercholesterolemia
- Family testing to detect affected relatives

77

Specific Dyslipidemias: Very High LDL Cholesterol (≥190 mg/dL) (continued)

Management

- LDL-lowering drugs
  - Statins (higher doses)
  - Statins + bile acid sequestrants
  - Statins + bile acid sequestrants + nicotinic acid

78

Specific Dyslipidemias: Elevated Triglycerides

Classification of Serum Triglycerides

• Normal	<150 mg/dL
• Borderline high	150–199 mg/dL
• High	200–499 mg/dL
• Very high	≥500 mg/dL

79

Specific Dyslipidemias: Elevated Triglycerides (≥150 mg/dL)

Causes of Elevated Triglycerides

- Obesity and overweight
- Physical inactivity
- Cigarette smoking
- Excess alcohol intake

80

Specific Dyslipidemias: Elevated Triglycerides

Causes of Elevated Triglycerides (continued)

- High carbohydrate diets (>60% of energy intake)
- Several diseases (type 2 diabetes, chronic renal failure, nephrotic syndrome)
- Certain drugs (corticosteroids, estrogens, retinoids, higher doses of beta-blockers)
- Various genetic dyslipidemias

81

Specific Dyslipidemias: Elevated Triglycerides (continued)

Non-HDL Cholesterol: Secondary Target

- Non-HDL cholesterol = VLDL + LDL cholesterol = (Total Cholesterol – HDL cholesterol)
- VLDL cholesterol: denotes atherogenic remnant lipoproteins
- Non-HDL cholesterol: secondary target of therapy when serum triglycerides are ≥200 mg/dL (esp. 200–499 mg/dL)
- Non-HDL cholesterol goal: LDL-cholesterol goal + 30 mg/dL

82

Comparison of LDL Cholesterol and Non-HDL Cholesterol Goals for Three Risk Categories

Risk Category	LDL-C Goal (mg/dL)	Non-HDL-C Goal (mg/dL)
CHD and CHD Risk Equivalent (10-year risk for CHD >20%	<100	<130
Multiple (2+) Risk Factors and 10-year risk <20%	<130	<160
0–1 Risk Factor	<160	<190

83

Specific Dyslipidemias: Elevated Triglycerides

Non-HDL Cholesterol: Secondary Target

- Primary target of therapy: LDL cholesterol
- Achieve LDL goal before treating non-HDL cholesterol
- Therapeutic approaches to elevated non-HDL cholesterol
  - Intensify therapeutic lifestyle changes
  - Intensify LDL-lowering drug therapy
  - Nicotinic acid or fibrate therapy to lower VLDL

84

Specific Dyslipidemias: Elevated Triglycerides

Management of Very High Triglycerides (≥500 mg/dL)

- Goal of therapy: prevent acute pancreatitis
- Very low fat diets (≤15% of caloric intake)
- Triglyceride-lowering drug usually required (fibrate or nicotinic acid)
- Reduce triglycerides *before* LDL lowering

85

Specific Dyslipidemias: Low HDL Cholesterol

Causes of Low HDL Cholesterol (<40 mg/dL)

- Elevated triglycerides
- Overweight and obesity
- Physical inactivity
- Type 2 diabetes
- Cigarette smoking
- Very high carbohydrate intakes (>60% energy)
- Certain drugs (beta-blockers, anabolic steroids, progestational agents)

86

Specific Dyslipidemias: Low HDL Cholesterol

Management of Low HDL Cholesterol

- LDL cholesterol is primary target of therapy
- Weight reduction and increased physical activity (if the metabolic syndrome is present)
- Non-HDL cholesterol is secondary target of therapy (if triglycerides ≥200 mg/dL)
- Consider nicotinic acid or fibrates (for patients with CHD or CHD risk equivalents)

87

Specific Dyslipidemias: Diabetic Dyslipidemia

- Lipoprotein pattern: atherogenic dyslipidemia (high TG, low HDL, small LDL particles)
- LDL-cholesterol goal: <100 mg/dL
- Baseline LDL-cholesterol ≥130 mg/dL
  - Most patients require LDL-lowering drugs
- Baseline LDL-cholesterol 100–129 mg/dL
  - Consider therapeutic options
- Baseline triglycerides: ≥200 mg/dL
  - Non-HDL cholesterol: secondary target of therapy

ATP III Guidelines

Population Groups

89

Special Considerations for Different Population Groups

Younger Adults

- Men 20–35 years; women 20–45 years
- Coronary atherosclerosis accelerated by CHD risk factors
- Routine cholesterol screening recommended starting at age 20
- Hypercholesterolemic patients may need LDL-lowering drugs

90

Special Considerations for Different Population Groups (continued)

Older Adults

- Men ≥65 years and women ≥75 years
- High LDL and low HDL still predict CHD
- Benefits of LDL-lowering therapy extend to older adults
- Clinical judgment required for appropriate use of LDL-lowering drugs

91

Special Considerations for Different Population Groups (continued)

Women (Ages 45–75 years)

- CHD in women delayed by 10–15 years (compared to men)
- Most CHD in women occurs after age 65
- For secondary prevention in post-menopausal women
  - Benefits of hormone replacement therapy doubtful
  - Benefits of statin therapy documented in clinical trials

92

Special Considerations for Different Population Groups (continued)

Middle-Aged Men (35–65 years)

- CHD risk in men > women
- High prevalence of CHD risk factors
- Men prone to abdominal obesity and metabolic syndrome
- CHD incidence high in middle-aged men
- Strong clinical trial evidence for benefit of LDL-lowering therapy

93

Special Considerations for Different Population Groups (continued)

Racial and Ethnic Groups

- Absolute risk for CHD may vary in different racial and ethnic groups
- Relative risk from risk factors is similar for all population groups
- ATP III guidelines apply to:
  - African Americans
  - Hispanics
  - Native Americans
  - Asian and Pacific Islanders
  - South Asians

ATP III Guidelines

Adherence

95

Interventions to Improve Adherence

Focus on the patient

- Simplify medication regimens
- Provide explicit patient instruction and use good counseling techniques to teach the patient how to follow the prescribed treatment
- Encourage the use of prompts to help patients remember treatment regimens
- Use systems to reinforce adherence and maintain contact with the patient

96

Interventions to Improve Adherence (continued)

Focus on the patient (continued)

- Encourage the support of family and friends
- Reinforce and reward adherence
- Increase visits for patients unable to achieve treatment goal
- Increase the convenience and access to care
- Involve patients in their care through self-monitoring

97

Interventions to Improve Adherence (continued)

Focus on the Physician and Medical Office

- Teach physicians to implement lipid treatment guidelines
- Use reminders to prompt physicians to attend to lipid management
- Identify a patient advocate in the office to help deliver or prompt care
- Use patients to prompt preventive care
- Develop a standardized treatment plan to structure care
- Use feedback from past performance to foster change in future care
- Remind patients of appointments and follow up missed appointments

98

Interventions to Improve Adherence (continued)

Focus on the Health Delivery System

- Provide lipid management through a lipid clinic
- Utilize case management by nurses
- Deploy telemedicine
- Utilize the collaborative care of pharmacists
- Execute critical care pathways in hospitals

ATP III Guidelines

Implementation

100

Percent of Adults Who Need Lifestyle and Drug Treatment

	Therapeutic Lifestyle Changes (TLC)		Drug	
CHD and CHD Risk Equivalents 10-year risk >20%	12.1	17.6	10.5	14.7
2+ Risk Factors 10-year risk 10-20%	5.5		4.2	
2+ Risk Factors 10-year risk <10%	7.4	15.3	1.4	3.8
0-1 Risk Factor	7.9		2.4	
Total	33%		18.4%	

101

Number of Adults (Millions) Who Need Lifestyle and Drug Treatment

	Therapeutic Lifestyle Changes (TLC)		Drug	
CHD and CHD Risk Equivalents 10-year risk >20%	24.1	35	20.7	29
2+ Risk Factors 10-year risk 10–20%	10.9		8.3	
2+ Risk Factors 10-year risk <10%	14.6	30.2	2.8	7.5
0–1 Risk Factor	15.6		4.7	
Total	65.3M		36.5M	

102

NCEP Resources to Foster ATP III Implementation

Professional

- Executive Summary
- ATP III At-A-Glance: Quick Desk Reference
- Web-based and electronic tools:
  - Palm OS interactive tool—for use at point of care
  - 10-year risk calculator
  - PowerPoint slide set—for teaching

103

NCEP Resources to Foster ATP III Implementation (continued)

Patient

- "Live Healthier, Live Longer" Web site
- "High Blood Cholesterol: What You Need to Know"—patient brochure
- 10-year risk calculator